

AD-A196 483

DRAFTED BY TLD

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

FILE NUMBER
①

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER AFIT/CI/NR 88- 13	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) LEARNING STYLES OF STAFF NURSES IN SELECTED CLINICAL AREAS OF PRACTICE		5. TYPE OF REPORT & PERIOD COVERED MS THESIS
7. AUTHOR(s) ANNE T. CHAISSON		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS AFIT STUDENT AT: EMORY UNIVERSITY		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS		12. REPORT DATE 1988
		13. NUMBER OF PAGES 54
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) AFIT/NR Wright-Patterson AFB OH 45433-6583		15. SECURITY CLASS. (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) DISTRIBUTED UNLIMITED: APPROVED FOR PUBLIC RELEASE		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report) SAME AS REPORT		
18. SUPPLEMENTARY NOTES Approved for Public Release: IAW AFR 190-1 LYNN E. WOLAVER <i>Lynn Walaw</i> 1d July 88 Dean for Research and Professional Development Air Force Institute of Technology Wright-Patterson AFB OH 45433-6583		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) <i>Wright-Patterson AFB OH 45433-6583</i>		

LEARNING STYLES OF STAFF NURSES IN SELECTED
CLINICAL AREAS OF PRACTICE

By
Anne T. Chaisson

Submitted in partial fulfillment of the requirements
for the Master of Nursing Degree
in the Nell Hodgson Woodruff
School of Nursing
Emory University
February, 1988

The proposal for this study was approved by the Institutional Review Board, Nell Hodgson Woodruff School of Nursing, of Emory University, on June 18, 1987

Accepted by the faculty of the Nell Hodgson Woodruff School of Nursing,
Emory University, in partial fulfillment of the requirements for the
Master of Nursing Degree.

Margaret Parsons
Director of Thesis

Thesis Committee:

M. Leah Horner

TABLE OF CONTENTS

	Page
LIST OF FIGURES	vi
LIST OF TABLES	vii
ABSTRACT	1
Chapter I. INTRODUCTION.	2
Background of the Study	2
Theoretical Foundation	7
Research Question	9
Definition of Terms	10
Chapter II. REVIEW OF THE LITERATURE.	11
Chapter III. METHODOLOGY	20
Research Approach	20
Setting, Population and Sample.	20
Procedure	21
Data Gathering Process	22
Assumptions and Limitations	22
Chapter IV. PRESENTATION AND ANALYSIS OF DATA	24
The Sample	24
The Data	25
Discussion	36
Chapter V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS	42
Summary	42
Conclusions	42
Recomendations	44
REFERENCES	46



tion For	
RA&I	<input checked="" type="checkbox"/>
AB	<input type="checkbox"/>
used	<input type="checkbox"/>
dition	
ation/	
bility Codes	
vail and/or	
Special	

APPENDICES	50
APPENDIX A: Explanatory Letter	51
APPENDIX E: Data Gathering Instrument	52

LIST OF FIGURES

	Page
Figure 1: Learning Styles Staff Nurses	27
Figure 2: Learning Styles Pediatric Staff Nurses . .	28
Figure 3: Learning Styles Intensive Care Unit Staff Nurses	29
Figure 4: Learning Styles Medical-Surgical Staff Nurses	30
Figure 5: Learning Styles Labor and Delivery Unit Staff Nurses	31
Figure 6: Learning Styles Neonatal Intensive Care Units Nurses	32
Figure 7: Learning Styles Operating Room Staff Nurses . .	33
Figure 8: Learning Styles Staff Nurses by Age	35
Figure 9: Learning Styles Staff Nurses by Years Experience	37

LIST OF TABLES

	Page
Table 1: Age	24
Table 2: Years in Clinical Area	24
Table 3: Education	25

LEARNING STYLES OF STAFF NURSES IN SELECTED
CLINICAL AREAS OF PRACTICE

ABSTRACT

The learning styles of staff nurses were investigated in this descriptive study using Kolb's Learning Style Inventory. The sample consisted of 52 registered nurses working in the various clinical areas of pediatrics, medical-surgical, intensive care, labor and delivery, neonatal intensive care, and the operating room. The setting was a large medical center located in a metropolitan southeast city of the United States. Nurses overall demonstrated a concrete learning style, yet differences in learning style emerged among nurses grouped by age, clinical practice area, and years of work experience in the clinical area.

CHAPTER 1
INTRODUCTION

The purpose of this research was to investigate the learning styles of staff nurses in selected clinical areas of practice. Following the background of this study, this chapter includes the theoretical foundation upon which this research was based, the statement of the research question, and concludes with the definition of terms pertinent to this study.

Background

Learning is a lifelong process; without learning one could not survive. It is widely agreed upon that learning occurs in three domains: cognitive, psychomotor, and affective. The cognitive domain deals with knowledge. Examples of learning in this domain are learning such skills as a new language or constructing correct sentences. Learning in the psychomotor domain involves performing physical movements, an example of which might be the nurse learning to perform venipuncture. The affective domain represents emotions, values and attitudes; changes in these areas represent learning in the affective domain. A generally accepted definition of learning specifies that learning has occurred when behavior change takes place and persists over time. Assessing for learning in the psychomotor domain is relatively simple, as the motor behavior of the learner is observed for changes. Changes in knowledge level or attitudes are more difficult to assess. One cannot observe the mental processes involved in performing

skills of mathematics or language translation without requiring the learner to explain, either verbally or in writing. Likewise, one cannot see into another heart for attitude or value changes. Instead, these changes are inferred through the learner's behavior. When the child receives disapproval from friends for being physically aggressive, he will likely learn to be more cooperative. Likewise, changes in attitudes and values are also confirmed by changes in behavior.

Many factors influence learning. The learner brings certain variables to the situation as does the teacher. One's personality and previous experiences with learning are two examples of influencing factors as are such factors as socioeconomic status, cultural background, physical and mental status, and intellectual ability. The environment also influences learning in a myriad of ways. Indeed the list of factors influencing learning may be endless. As no two people are exactly alike, no experience will be the same for any two learners.

The teacher's impact on student learning is significant. While the role of the teacher is not to make the student learn, for one cannot be "made" to learn, the teacher instead, facilitates learning in several ways. Motivating students to learn, and creating an environment conducive for learning are just two ways that the teacher can facilitate learning. Other significant strategies are to provide methodologies congruent with the student's learning style and to assist the student develop a more holistic style of learning.

Traditionally, the education literature has emphasized the influence of the teacher and instructional methodology in the learning process.

The learner has been studied in terms of personality traits, prior academic achievement, and intelligence factors. An influence of equal, if not more, importance on learning is the individual's learning style or the process by which an individual learns.

Learning style is believed to be developed by a sequence of repeated, successful experiences in learning. Over the years, an effective learner develops a repertoire of learning skills including learning from feeling, listening, watching, thinking, and doing. Some situations will require learning by a particular mode; the nurse learns the correct way to make a patient's bed by "doing". Another example might be learning music appreciation by "listening". As an adult, one may emphasize and rely on some skills more than others; thus, a learning style develops (McBer, and Co., 1987).

Learning style has been defined in several ways, all focusing on the individual variation which appears to exist. Simply stated, learning style is the way people learn or the way people learn best (O'Connor, 1986). Lashinger and Boss (1984, p.375) defined learning styles as "the way individuals organize information and experiences". Kogan (cited in Garity, 1985, p.12) provided a thorough definition: "individual variations in modes of perceiving, remembering, and thinking, or distinctive ways of apprehending, storing, transforming, and utilizing information."

How learning style is acquired is not known. Vittetoe (1983) suggested that success and satisfaction of direct experience with certain modes of learning are probably influencing factors. While some have theorized that learning style is inborn, Kolb's theory of

experiential learning suggests that one learns from the environment (1984). When certain skills are repeated in certain environments, the learner becomes proficient at those skills (making decisions, getting involved, listening, or creating ideas, for example); learning style is influenced. Likewise, as the environment and experiences change, so is learning style influenced.

Some educators posit that to foster learning in a given situation, instructional methods and learning styles should complement each other; learning is maximized and achievement is thus enhanced (Smith & Frazier, cited in Garity, 1985). Lange postulated that "When teachers and students were matched on learning style, the failure-withdrawal rate in specific nursing courses was less among the matched than the non-matched students" (Lange, cited in Garity, 1985, p.14). A learner confronted with teaching-learning methods incongruent with the preferred learning style will have greater difficulty learning the given material (Vittetoe, 1983). However, others, like Kolb (1984), assert that teaching-learning strategies should not focus on any one specific style, but should encompass all styles of learning to allow the individual to develop progressively a more holistic style of learning.

Cross (1979) reported on cross-cultural studies of the role socialization plays in one's learning style. The conclusions were that one's learning style is largely determined through socialization (recognizing also, the possibility of a genetic factor). This resembles Kolb's assertions that the environment and experiences influence one's learning style.

Learning style also influences one's learning preferences. Garity (1985, p. 13) defined learning preference as the "choice of one learning situation over another". Most individuals have a learning preference. One individual may prefer to learn via the lecture method; another may select computer-assisted instruction, and still another may favor group work.

As learners differ, so do nurses and the areas in which they practice. Clinical settings such as labor and delivery, pediatrics, and operating room (to name a few) differ substantially as to environment, and the work and skills required of nurses working there. Most nurses are attracted to specialty areas by subjective forces. Some studies have been conducted investigating the relationship between personality and choice of clinical practice area. While substantial educational research on learning style is available, little is known about the way nurses learn. One may wonder, if nurses differ in their preferred clinical practice areas, perhaps they differ also, in their learning styles.

The nurse involved in staff development and education should be concerned about learning style differences among nurses. The nursing staff development educator provides educational offerings for nurses from various areas of clinical practice. In planning the teaching methodology for these groups offerings, the educator needs to consider the learning styles of the group members. The value in knowing the predominant learning style of nurses in specific clinical areas is so that planned teaching strategies can initially focus on that predominant style, and then expand to include other styles.

Quality health care delivery requires competent, skilled, and knowledgeable professionals. Standard V of the Accreditation Manual for Hospitals, 1982 Ed. (p.119) states: "nursing department/service personnel shall be prepared through appropriate education and training programs for their responsibilities in the provision of nursing care". The staff development department assists nursing personnel maintain and improve competency in practice (ANA, 1976).

When group learning styles are unknown, the program design should contain several types of learning experiences to accommodate all learning styles (O'Connor, 1986). If a predominant learning style exists among a particular nursing group, appropriate designs may be implemented in their respective education offerings. These designs could focus initially on that predominant style of learning and then expand to address other styles of learning. This strategy could be cost-effective in terms of dollars and time, it could maximize learning, and should assist learners to develop more holistic styles of learning. Therefore, a question for the staff development educator is what are the learning styles of staff nurses working in selected clinical areas of practice?

Theoretical Framework

The major model upon which this research was based, is David A. Kolb's model of experiential learning (1984). The foundation of this theory lies in the previous works of theorists such as John Dewey, Kurt Lewin, Jean Piaget, and Carl Jung. The theory of experiential learning portrays the learning process in a way that individual differences in

style and environments may be identified. According to Kolb (1984), people are not identical in learning styles because of the multiplicity of factors influencing learning style. Among the many factors influencing learning style are personality type, educational specialization, professional career, current job role, and adaptive competencies.

People learn through their experiences, according to Kolb. The learner first has a concrete experience. Next, the learner reflects on that experience (reflective observation). After reflecting, the learner can generalize and/or form concepts (abstract-conceptualization) from which a hypothesis may be developed. Hypothesis-testing occurs in active-experimentation from which results a new concrete experience. An effective learner is proficient in all four areas; however, abilities in certain areas may prevail. Kolb's learning styles are a combination of strengths in two of the above four areas of learning. The results are four separate styles of learning: diverger, converger, assimilator, and accommodator.

Kolb (1984) has described these four learning styles as follows:

- (1) Divergers are proficient in concrete experience and reflective observation abilities. Imagination and the ability to see things from various angles are their strengths. They enjoy generating ideas in brainstorming sessions, and are sensitive to feelings. Divergers are people-oriented and are found in human service careers and in the arts.
- (2) Convergers are skilled at abstract conceptualization and active experimentation. Less people-oriented, convergers excel in finding solutions, technical tasks, and theory-application. Engineers are

often convergers.

(3) Assimilators are proficient in the skill of abstract conceptualization and reflective observation.

Like convergers, they are less people-oriented and also less practical; they are more interested in abstract ideas and concepts. Mathematicians are often assimilators; they excel in theory building through inductive reasoning. Assimilators are also drawn to science and information careers.

(4) Accommodators are proficient in concrete experience and active experimentation. They are people-oriented, good at planning and getting a job done. People with this learning style have a tendency to rely on "gut" feelings rather than technical analysis. Accommodators are often found in action-oriented careers such as marketing, management, and government.

Kolb's theory of experiential learning is a suitable framework for the purpose of this study. It is not known whether the nurse selects an environment in which to work because of his/her learning style or if the environment influences the learning style of the nurse. It does seem clear that nurses have or develop preferences for certain work environments. In addition, it seems likely that one might expect the learning styles of nurses working in different clinical settings to vary.

Research Question

What are the learning styles of staff nurses working in selected clinical areas of practice?

Definition of Terms

This research is guided by the following definitions of terms:

Learning style is defined by Kolb as "individual, unique possibility-processing structures" (Kolb, 1984, p. 64), and "individual orientations toward learning" (Kolb, 1984, p.67). Operationally, learning style is that predominant orientation toward learning (either converger, diverger, accommodator, or assimilator) as identified on the Kolb Learning Style Inventory.

- Staff nurses in selected clinical areas of practice refers to those registered nurses (ADN, BSN, or diploma prepared) working as staff nurses in six selected settings within an acute care hospital. Those settings include the following specialties: labor and delivery, neonatal intensive care, adult critical care, the operating room, and those working in general pediatrics and general adult medical-surgical units.

CHAPTER II

REVIEW OF THE LITERATURE

This chapter contains a review of the current literature pertaining to learning styles and career choice. Studies involving learning style and careers are discussed first. Learning style as it relates to other aspects of education in health care follows.

Learning Style and Career Choice

Individual differences in the learners have long been apparent, resulting in great amounts of scholarship about the teaching-learning process. More recently, however, the role of learning style, and the preferences individuals favor for learning have emerged in the literature as focal points for research.

David Kolb's theory of experiential learning is one keystone framework for research on learning style. Kolb (1981) suggested a relationship between learning style and career choice when he investigated the learning styles of over 800 managers and graduate students in management. While the subjects either held positions in management, or were graduate students in management, their undergraduate majors differed. The investigation explored their learning styles and found a correlation between the undergraduate major and learning style as reflected on the Kolb Learning Style Inventory (LSI). Engineers had convergent learning styles; business majors were accommodators; history, English, political science, and psychology majors were divergers; and the assimilators were those with majors in

economics, sociology, mathematics, and chemistry (Kolb, 1981).

In further investigations, Kolb and Goldman (cited in Kolb, 1981) surveyed a large number of M.I.T. seniors and demonstrated a correspondence between learning style and major fields of study. Engineers were accommodators; those studying humanities were divergers; math majors were assimilators, and those in economic studies were convergers (Kolb, 1981).

Witkin's research on learning style also suggested a correlation between learning style and career choice. Based on his field-dimension concept of learning style, Witkin showed field-dependent learners choosing careers involving people and human relations: teachers, counselors, and business, for example. Field-independents favored the sciences, such as engineering, math, and physics (Witkin, 1981).

Witkin, Moore, Goodenough, Friedman, Owen, and Raskin (1977) had also studied Witkin's field-dimension concept of learning. In a longitudinal study of over 1,500 students, the researchers attempted to define the relationship between learning style and chosen major fields of study. The students were followed from the period of undergraduate college entry into enrollment in graduate or professional schools. This research revealed that choice of major was related to learning style; college-entry students whose career majors and learning styles were congruent tended to remain enrolled in that major. Those whose learning styles were not congruent were more apt to change fields of study before graduating.

Cross (1979) suggested that learning style and career choice may be related within professions as well as between them. Using Kolb's

model of learning, Christiansen, Lee, and Bugg (1979) found that 70 percent of 53 community nurse practitioners studied were accommodators or divergers. Using Witkin's concept of learning style, Quinlan and Blatt (cited in Witkin, 1981) found a difference in the learning style between psychiatric and surgical nursing students. The learning style of the psychiatric nursing students tended towards field-dependent; the surgical nursing students favored field-independence.

Laschinger (1986) investigated the learning styles of 68 third year baccalaureate nursing students and found the predominant learning style to be either diverger or accommodator. This is consistent with Kolb's theory of experiential learning; nurses tend to have concrete learning styles.

Witkin, Moore, Goodenough, and Cox (1977) also carried out research relating learning style and career choice. They postulated that differences within career domains are more evident when careers are viewed from a "broad-gauge" as opposed to a "narrow-gauge" perspective. For example, nursing would be viewed as a career within the "broad gauge" of "social sciences"; differences are highlighted when the career of "social science" is compared to other "broad gauge" careers such as the domain of "physical science".

While Witkin suggested differences among broad gauge careers to be more prominent, differences within narrow-gauge careers have been identified. Witkin et al. (1977) cite numerous studies (Nussbaum, 1965; Kennedy, 1972; Nagle, 1968) illustrating this: systems engineers were more field-independent than non-system engineers; student pilots in naval officer training favored field-independence

over non-pilot students (such as navigators); and finally, graduate students in clinical psychology were more field-dependent while those in experimental psychology tended towards field independence.

A frequently cited study on learning style and career choice in the health care area, is that of Plovnick (1975). Based on Kolb's theory, Plovnick surveyed 47 fourth year medical students at Boston University School of Medicine and found learning style related to the students' preferred medical specialty. Accomodators and divergers favored family practice and primary care; convergers chose medical specialties and subspecialties; and assimilators reported an interest in academia and pathology.

In a replicated study, Wunderlich and Gjerde (1978) surveyed over 200 practicing physicians and medical students with results which were not congruent with Plovnick's study. Instead, the Wunderlich and Gjerde research indicated that the prevailing learning style in all groups except psychiatry was converger. They criticized Kolb's LSI as not being sensitive enough to discriminate between medical specialties. Additionally, they criticized Plovnick's research on the basis of the small sample size used. They concluded that no apparent association between learning style and career choice was substantiated from their study.

In a subsequent study, Sadler, Plovnick, and Snope (1978) investigated the learning styles of 108 family practice residents among numerous residency programs in Florida, Pennsylvania, New Jersey and Tennessee. Using the LSI again, the researchers discovered 43 percent of the sample to be accomodators; 31 percent were convergers. These

findings were generally consistent with Plovnick's earlier work. While a higher percentage of convergers was identified, it must be remembered that the Sadler, et al sample was considerably larger (at 108) than that of Plovnick's at 47.

Whitney and Caplan (1978) used Kolb's LSI to investigate the learning styles of 68 family practice physicians in Iowa attending a refresher course and compared them to 115 family practice physicians not in attendance at the course. They found no differences among the surveyed physicians. Furthermore, no predominant learning style emerged. Their conclusions supported those of Wunderlich and Gjerde, in that learning style and career choice are not associated.

Baker and Marks (1981) used the LSI to investigate the learning styles of attending staff and residents in anesthesiology. The majority were found to be accommodators; however, the researchers warned that the sample size of 21 was too small to warrant any statistical significance. Ramsborg and Holloway (1985) also used Kolb's LSI to compare the learning styles of 65 clinical instructors and 72 students of a nurse anesthetist program. The majority of entering students were shown to be assimilators, while students completing their first and second years of study were accommodators. The majority of the faculty were divergers. These results may reflect the influence of experience on learning style. Combined, the majority of the sample consisted of accommodators and divergers, consistent with Kolb's theory.

Learning Style and Education

In addition to the relationship between learning style and career

choice, learning style has also been investigated in terms of its impact on the teaching learning process and issues in education. The relationship between nursing students' learning styles and ability to solve problems was studied by Gunning (cited in Blagg, 1985). A correlation between a field-independence learning style and critical thinking ability was documented, as well as a relationship between field-independence and clinical problem solving skills.

The ability to predict academic success from one's learning style has also been the topic of investigations. Suddick, Yancey, and Wilson (1983) followed 54 first and second year dental students over a two year period and showed that a field-independent learning style was the best overall predictor of clinical performance of those students whose pre-dental grade point average fell below 3.0. However, Cunningham and Trickey (cited in Stafford, 1986) found no correlation between learning styles and performance in academics and clinical coursework of occupational therapy students. Additionally, Blagg (1985) did not find any correlation between cognitive style and academic success of students in graduate allied health education programs. He found his results surprising though, and postulated that the small sample size of 51 was a factor in the results. Bragg did encourage further investigation into the areas of learning style as a predictor of academic performance.

Learning style has also been investigated in terms of individual learning preferences. Within a group of 144 Harvard students with MBAs, Kolb (1976) found those students whose learning style was "active experimenter" also had predominant learning preferences. These

students favored small group discussion, homework, projects, and verbal feedback over other types of teaching-learning modes.

Rezler and French (1975) developed a Learning Preference Inventory (LPI) to assess the learning preferences of students in dietetics, biocommunication arts, medical laboratory sciences, medical record administration, and occupational and physical therapy. Findings indicated that all students preferred concrete and teacher-structured modes of learning. Later, Rezler and Rezmanovic (1981) used the LPI to examine the learning preferences of 692 health professions students and practitioners. In keeping with earlier studies, the majority of the 159 allied health and 593 pharmacy students preferred teacher-structured and concrete learning situations. Rogers and Hill (1980) also used the LPI in studying the learning preferences of 30 graduate and 59 undergraduate occupational therapy students at the University of Southern California. Results of this study showed the students favored concrete and teacher-structured situations. Vittetoe and Hooker (1983) also used the LPI to study the learning style preferences of 309 allied health practitioners in a university teacher education program. Their three-year study showed concrete and teacher-centered learning styles the preferred choice among eight allied health care fields: nursing, laboratory, medical technology, respiratory, physical therapy, radiology, dental hygiene, and dental assistants.

Another tool used to assess learning styles is the Modified Hill Cognitive Style Model. Mays (1983) used this instrument to investigate the preferred learning styles of 76 associate degree medical laboratory technicians. All of the subjects preferred learning situations where

they could "touch" learning materials, for example: touching the computer terminals in a computer class, or touching theoretical instruction in a lecture by transcribing notes or highlighting passages in a text. Only half of the students preferred to learn by demonstrating a motor skill to an acceptable form. The researcher postulated that this finding may indicate a fault in the instrument.

Llorens and Adams (1978) used the Canfield-Lafferty Learning Style Inventory to assess the learning styles of 22 graduate and 55 undergraduate occupational therapy students at the University of Florida. Results showed that students favored working with people and favored direct experience. In addition, they preferred to work alone (as opposed to working in groups) and to set their own objectives.

Leonard and Harris (1979) used the concept of learning style in exploring ways of enhancing individual and small group teaching and learning transactions. As part of a three-year research project, Kolb's LSI was administered to all faculty and residents of an internal medicine residency program at the University of Minnesota School of Medicine in Minneapolis. While the research findings for this study were not described, the investigators' conclusions were that knowledge of learning styles can assist the faculty to analyze learning transactions and to facilitate learning.

Many aspects of learning style have been studied, most of the research occurring since World War II. While providing fascinating insight into the influence on the teaching/learning process, learning style has more recently been investigated in terms of career choices and the ways different professionals learn. As variations in the

learning styles of different professionals are understood, it is likely that the methods used by individual nurses to learn will also be understood more clearly.

CHAPTER III

METHODOLOGY

This chapter presents the steps followed in carrying out this investigation. It includes descriptions of the research approach; setting, population, and sample; and the procedure followed. Discussion of the data collecting process and assumptions and limitations governing the study completes the chapter.

Research approach

The design of this study was descriptive in nature. The researcher was interested in describing the phenomenon of learning style among nurses, and not in manipulating variables. The aim of the research was simply to describe the learning styles of nurses in selected areas of clinical practice.

Setting, population, and sample

The research was conducted during the summer of 1987 at a large teaching hospital in a metropolitan city in the southeast United States. This site was selected because it contained all the nursing specialty areas of interest. A further benefit to using this one setting was the possibility of reducing intervening institutional variables had more than one setting been used.

Registered nurses working as staff nurses in the selected clinical areas of practice were asked to participate in this study. The clinical areas selected included the adult and neonatal intensive-care

units, operating room, labor and delivery suites, and adult medical-surgical and general pediatric wards.

The researcher sought ten volunteer staff nurses from each clinical area to constitute the sample. Criteria for participation was licensure to practice as a registered nurse, and employment as a staff nurse. The sample was one of convenience and participation in the study was completely voluntary.

Procedure

The researcher met with the nursing directors of each clinical area to explain the purpose of the research. The directors then communicated to their head nurses the researcher's intentions and requested cooperation.

The researcher approached the head nurses in each clinical area during the day shift. The head nurses were given a tool for each of the registered nurses working on that shift. Next, the head nurses distributed the tool among their staff nurses and asked for voluntary participation. The researcher then returned, at the end of the shift, to pick up any completed forms. The researcher repeated this procedure on four different occasions attempting to obtain ten participants in each clinical area.

Participation in this study was completely voluntary. Participants were free to participate and withdraw at any time without affecting their status as employees of that agency. Additionally, subjects remained anonymous; the researcher did not know who did or did not participate.

A cover-letter, with instructions, was attached to the tool. Informed consent was implied with the completion of the instrument, and so stated in the cover-letter. Anonymity was also assured in the cover-letter; no names were required on the tool and subjects were assured that data would be presented in group form.

Data gathering process

In keeping with the theoretical framework of this study, Kolb's Learning Style Inventory (LSI) was the instrument employed with permission of the McBer Company. The LSI, a reliable, easy to administer tool, is a self-description test. Results of the LSI classify the subject into one of the four learning styles: converger, diverger, assimilator, or accommodator. Kolb (1984) and Plovnick (1975) state split-half reliability coefficients of 0.78 to 0.86 on the dimension scores, suggesting reliability suitable for this research. The McBer Company states split-half reliability, on the new 1985 LSI, of 0.87 to 0.93 on the dimension scores.

Assumptions and limitations

The assumptions upon which this research was based included the following:

- (1) People learn from their experiences.
- (2) The learning process is not identical for all persons.
- (3) Individual nurses tend to have an identifiable learning style.
- (4) Learning styles are influenced by personality types, educational specialization, professional career, current job role, and adaptive

competencies (Kolb, 1984).

(5) Learning style can be described by the Kolb Learning Style Inventory.

Several limitations were inherent in this research design. First, the results of this study could not be generalized beyond the population studied. It is questionable whether registered nurses in this institution were representative of nurses in this area of the city, state, or country as a whole. Second, because the sample consisted of volunteers, the findings may have been biased toward individuals interested in research and/or learning style. Recognizing these biases, application of the results is limited.

Limitations of the instrument were present also. The LSI is a self-reporting tool; subjects may have responded in a way they felt they ought to. There was no way to ascertain the truth to individual responses.

Finally, the design was limited to the identified areas of clinical practice selected by the researcher. The exclusion of psychiatric nurses was purposeful because the agency employs primarily clinical nurse specialists in that area. In addition, nurses in positions of management, education, and other clinical nurse specialists were excluded.

CHAPTER IV
PRESENTATION AND ANALYSIS OF DATA

This chapter contains presentation of the data obtained from this research divided into three areas. Sample characteristics are discussed first, followed by presentation of the data. A discussion of the findings completes the chapter.

The Sample

Fifty-two registered staff nurses participated in this research. All except for one operating room nurse were female. There were ten nurses in each of the following clinical areas: adult intensive care, adult medical-surgical, operating room, and labor and delivery. There were seven general pediatric nurses, and five nurses representing the neonatal intensive care unit. Other demographics such as age, education level, and number of years employed in the current clinical setting are presented in Tables 1, 2, and 3.

Table 1: Age

AGE	NUMBER	%
25 or <	15	29 %
26-35	22	42 %
36-45	11	21 %
> 45	4	8 %

n=52

Table 2: Years in Clinical Area

YEARS	#	%
< 1	11	21 %
1-2	12	23 %
3-5	7	13 %
> 5	22	42%

n=52

Table 3: Education

EDUCATION	NUMBER	%
ADN	21	40 %
Diploma	18	35 %
BSN	18	21 %
Masters	1	2 %
Doctorate	1	2 %

ADN= associate degree in nursing

BSN= baccalaureate degree in nursing

n=52

As shown in Table 1, all but four of the nurses were under the age of 45; the majority being in the 26-35 age range. The 25 and under age group was next highest with 29%, while 21% were between the ages of 36 and 45.

Table 2 contains data on the number of years experience the nurses had in their identified clinical practice areas. The majority of the nurses surveyed (42%) reported over five years of experience in the clinical area. Thirteen percent had 3-5 years of experience, while 23% reported 1-2 years. Twenty-one percent of the sample were novice nurses, or new to the area, indicating less than one year of experience in the designated specialty.

Table 3 displays the education levels of the sample. The majority were baccalaureate (35%) and associate (40%) degree nurses, with 21% of the sample holding diplomas in nursing. Two nurses indicated education beyond the baccalaureate degree: one at the masters level and one with a doctorate.

The data

Figure 1 represents data indicating learning style for all six clinical practice areas. Results are displayed in graphs representing

percentages. In five of the six clinical practice areas a predominant learning style was possessed by 50% or more of the nurses tested. In the sixth area, the operating room, a predominant learning style is demonstrated; however, only 40% of the nurses possessed this particular learning style. In three of the clinical practice areas the "diverger" learning style was the single style most preferred. "Assimilator" was the most preferred style in two practice areas, and "accommodator" was most common in one area. The data on each individual practice area are displayed in Figures 2 through 7.

The learning styles of pediatric nurses are represented in Figure 2. Within a sample size of seven, four nurses (57.3%) were divergers: proficient in concrete experience and reflective observation skills. More pediatric nurses had a learning style of diverger than the remaining three learning style categories combined. There was only one nurse each for the remaining learning style categories of converger, assimilator, and accommodator, each representing 14.2% of the sample surveyed.

Figure 3 contains the data for intensive care nurses. Like the pediatric nurses, the majority of the intensive care nurses demonstrated the learning style of diverger, representing 50% of the sample. Two nurses were assimilators (20%) and two more were accommodators (20%). One nurse (10%) was a converger.

The data for medical-surgical nurses is contained in Figure 4. Unlike the previous two clinical practice areas, the majority of the medical-surgical nurses had a learning style of assimilator: proficient in the skill of abstract conceptualization and reflective observation.

Figure 1

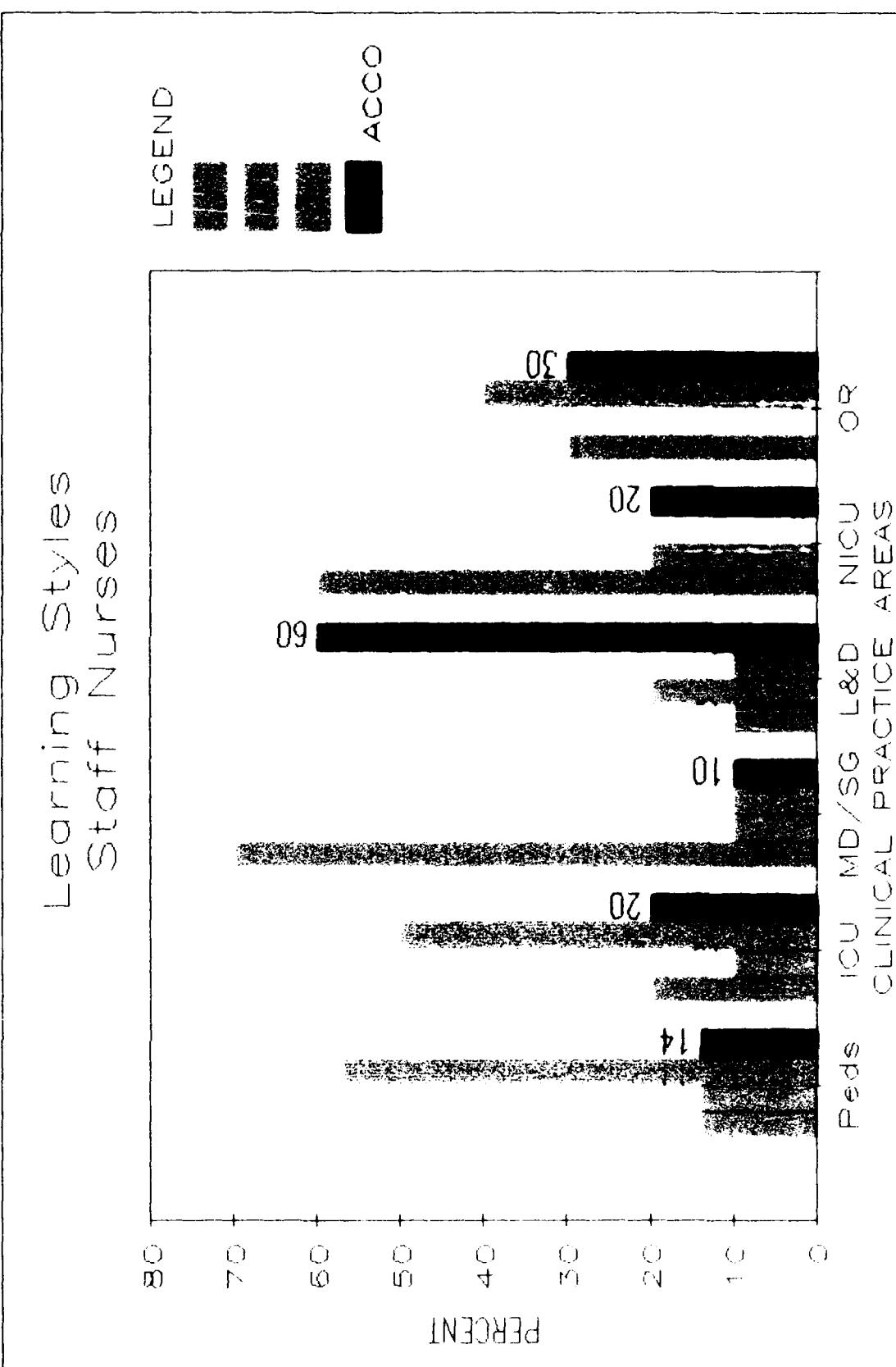


Figure 2

Learning Styles
Pediatric Units
Staff Nurses

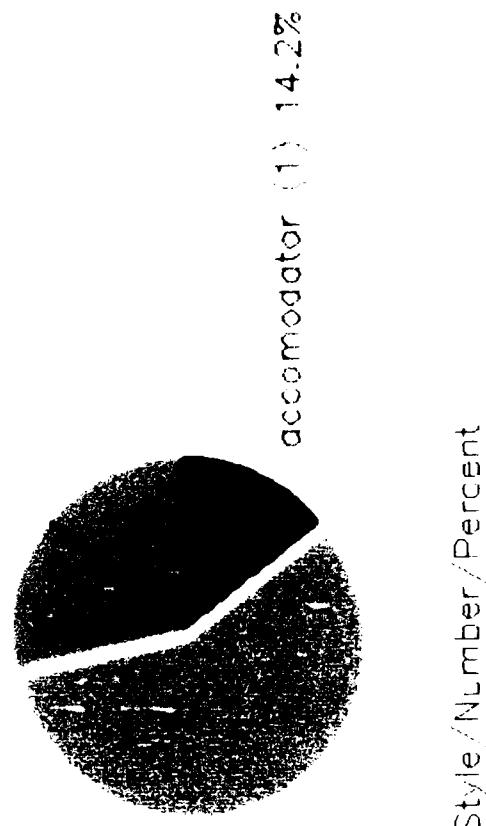


Figure 3

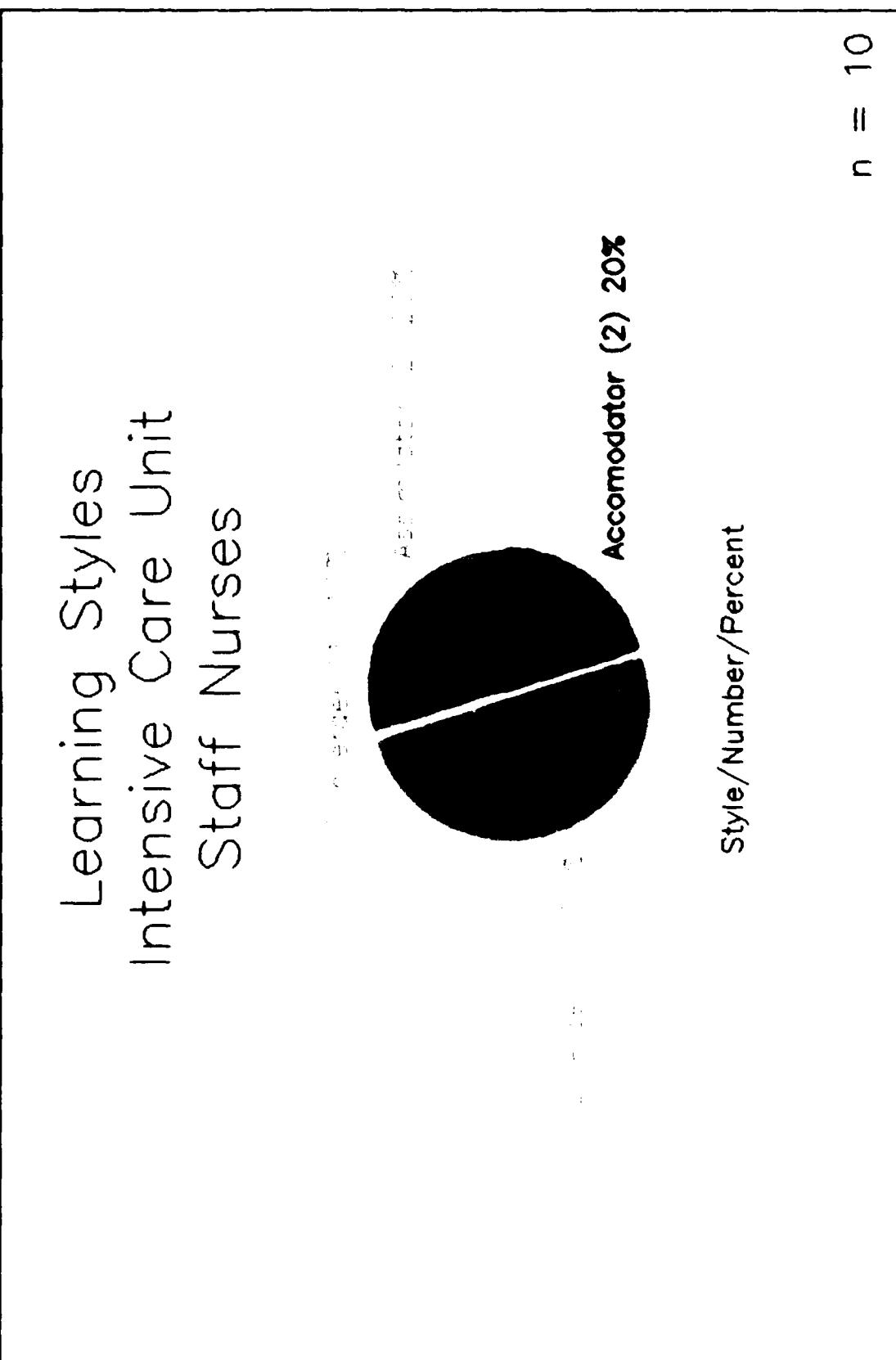
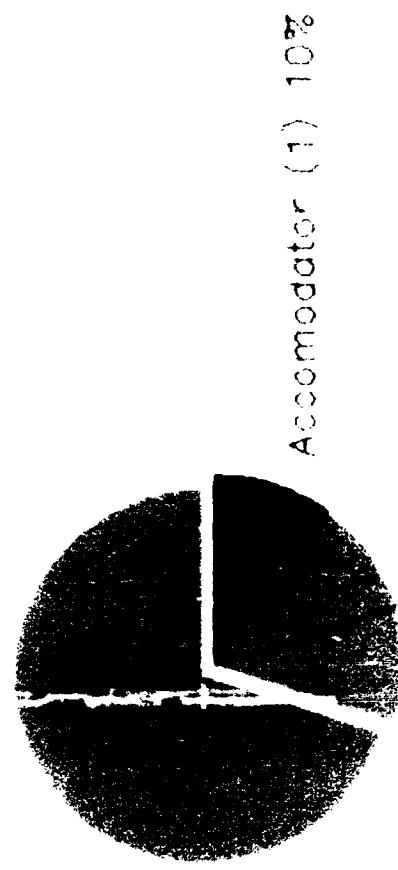


Figure 4

Learning Styles
Medical-Surgical Wards
Staff Nurses



Style / Number / Percent

n = 10

Figure 5

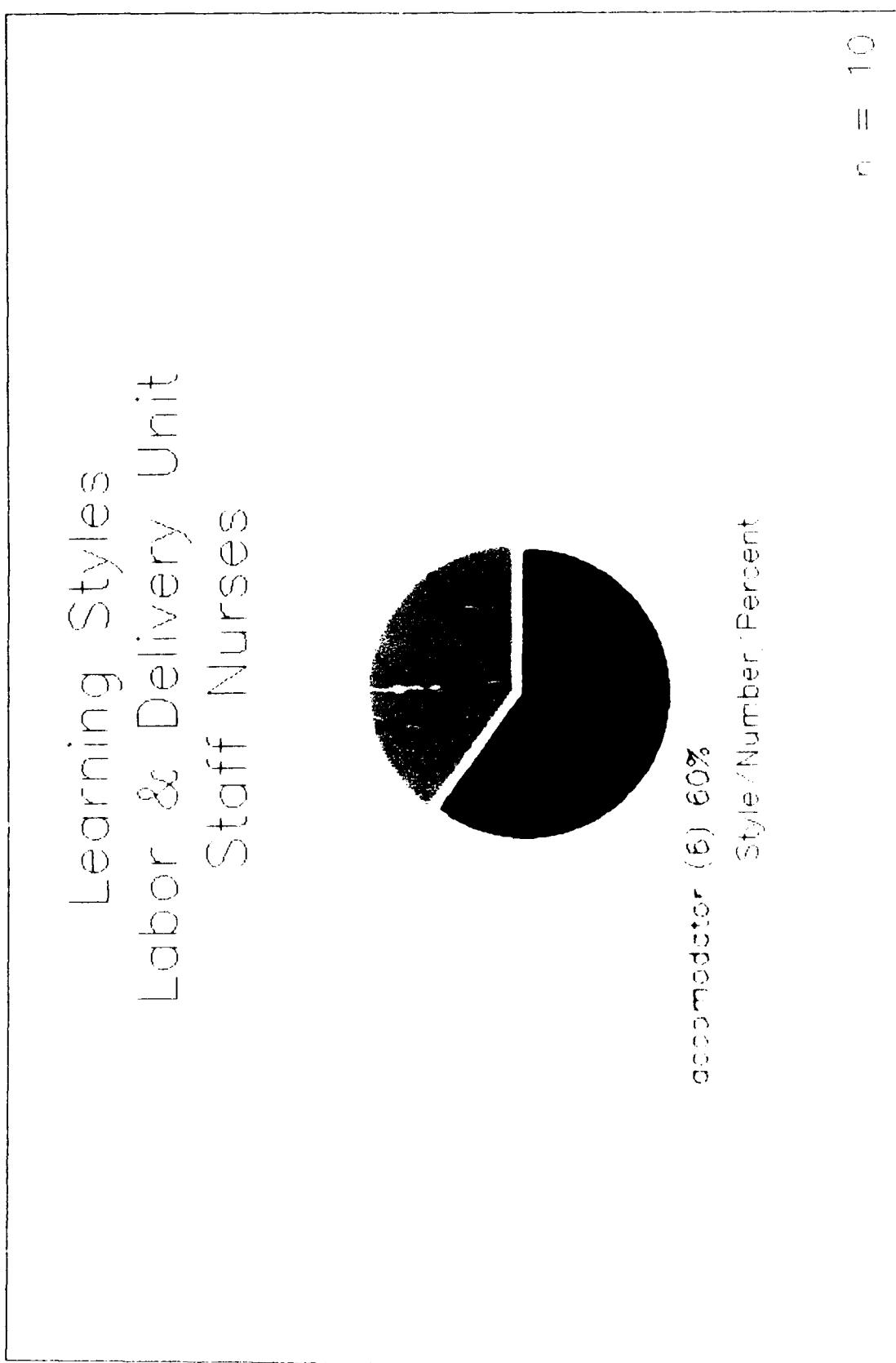
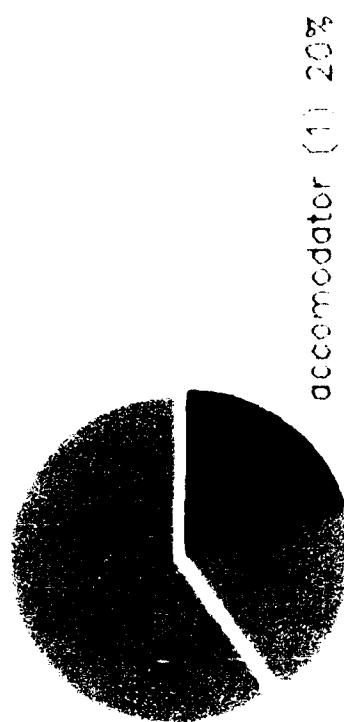


Figure 6

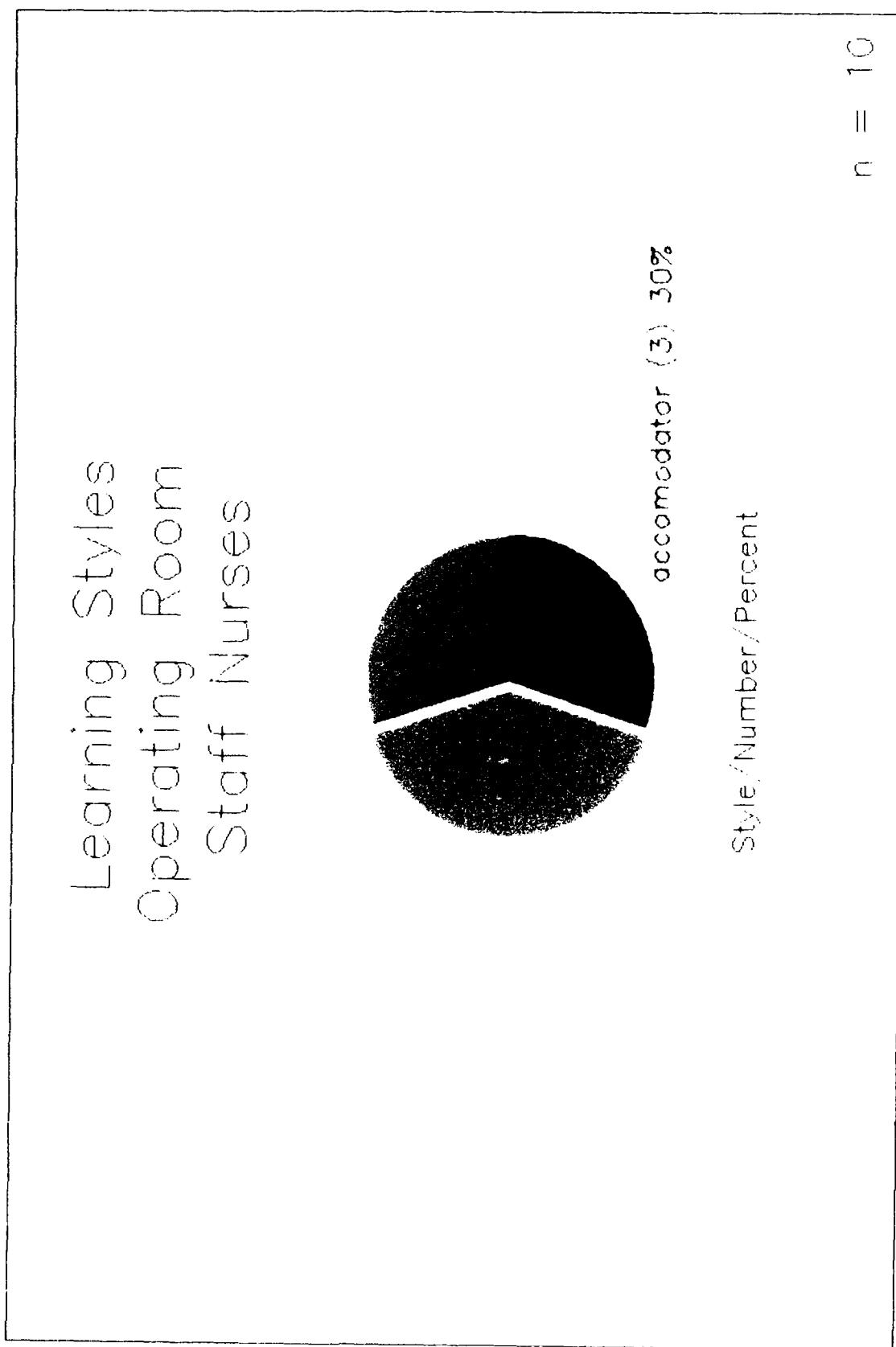
Learning Styles
Neonatal Intensive Care Units
Staff Nurses



Style / Number / Percent

n = 10

Figure 7



With a sample size of ten, seven nurses were assimilators, representing 70 % of the sample. The remainder of the sample is evenly distributed among the other three learning styles; one each for accommodator, diverger, and converger.

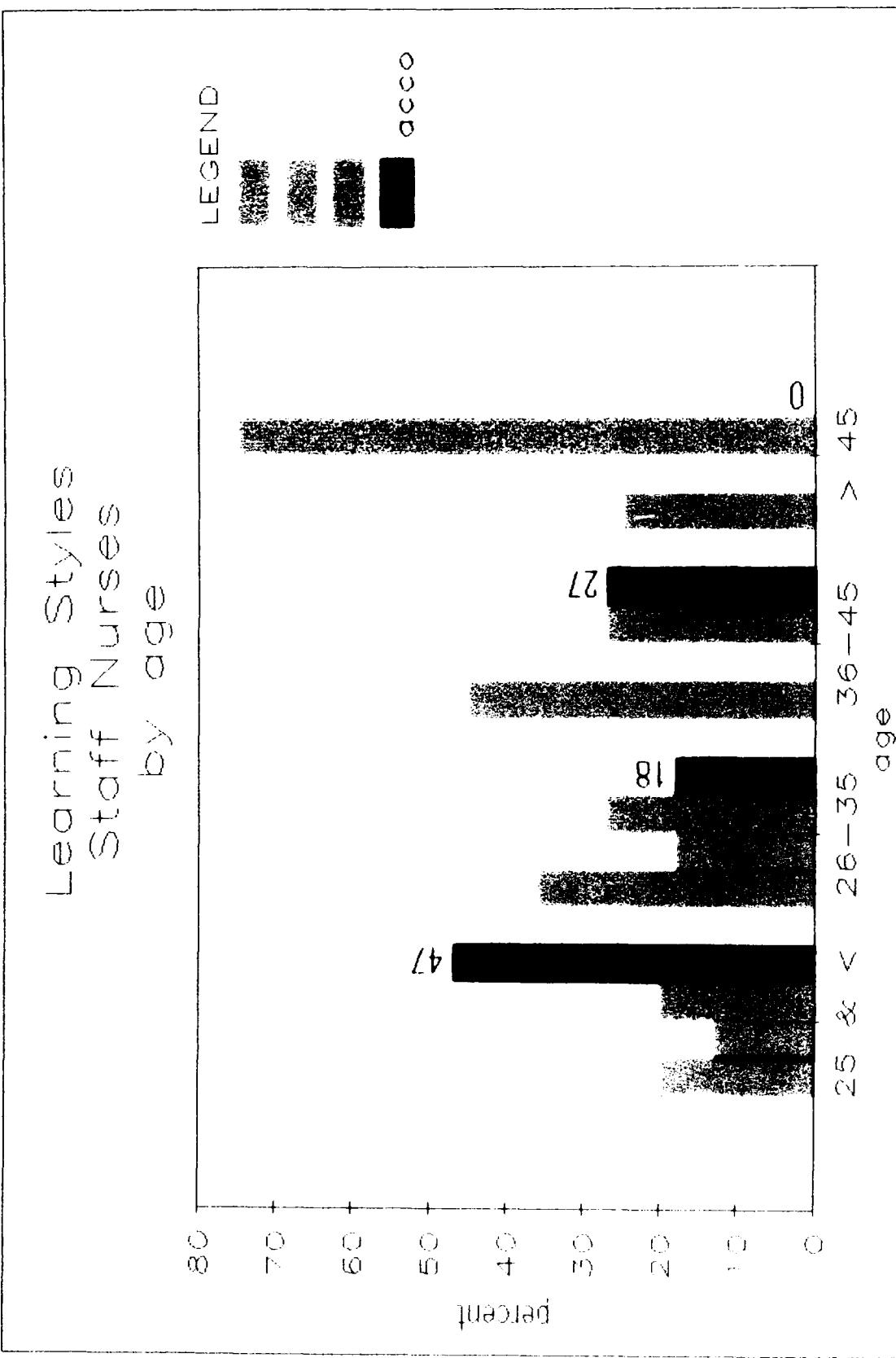
The learning styles of nurses working in labor and delivery units are reflected in Figure 5. Six of the ten nurses surveyed were accommodators: proficient in concrete experience and active experimentation. Two nurses were convergers, constituting 20% of the sample. There was one nurse for each of the remaining learning styles of diverger and assimilator (10% each).

The data for neonatal intensive care unit nurses is displayed in Figure 6. Of five nurses, three were assimilators representing 60% of the total. There was one accommodator (20%) and one converger (20%). None of the nurses surveyed in this area had a divergent learning style.

Figure 7 contains the data on learning styles of the operating room nurses surveyed. In the sample of ten nurses, four (40%) were divergers. Three nurses were assimilators (30%), and another three (30%) were accommodators (30%). None of the operating room nurses surveyed were convergers.

Figure 8 represents data indicating learning styles of the sample by age groups. The predominant learning style of nurses age 25 or younger (29% of the sample) was accommodator with 47% indicating preference for this style. Nurses aged 26-35 constituted 42% of the sample. In this group, 36% preferred the learning style of assimilator. In the 36-45 age group (21% of the sample), 45% also

Figure 8



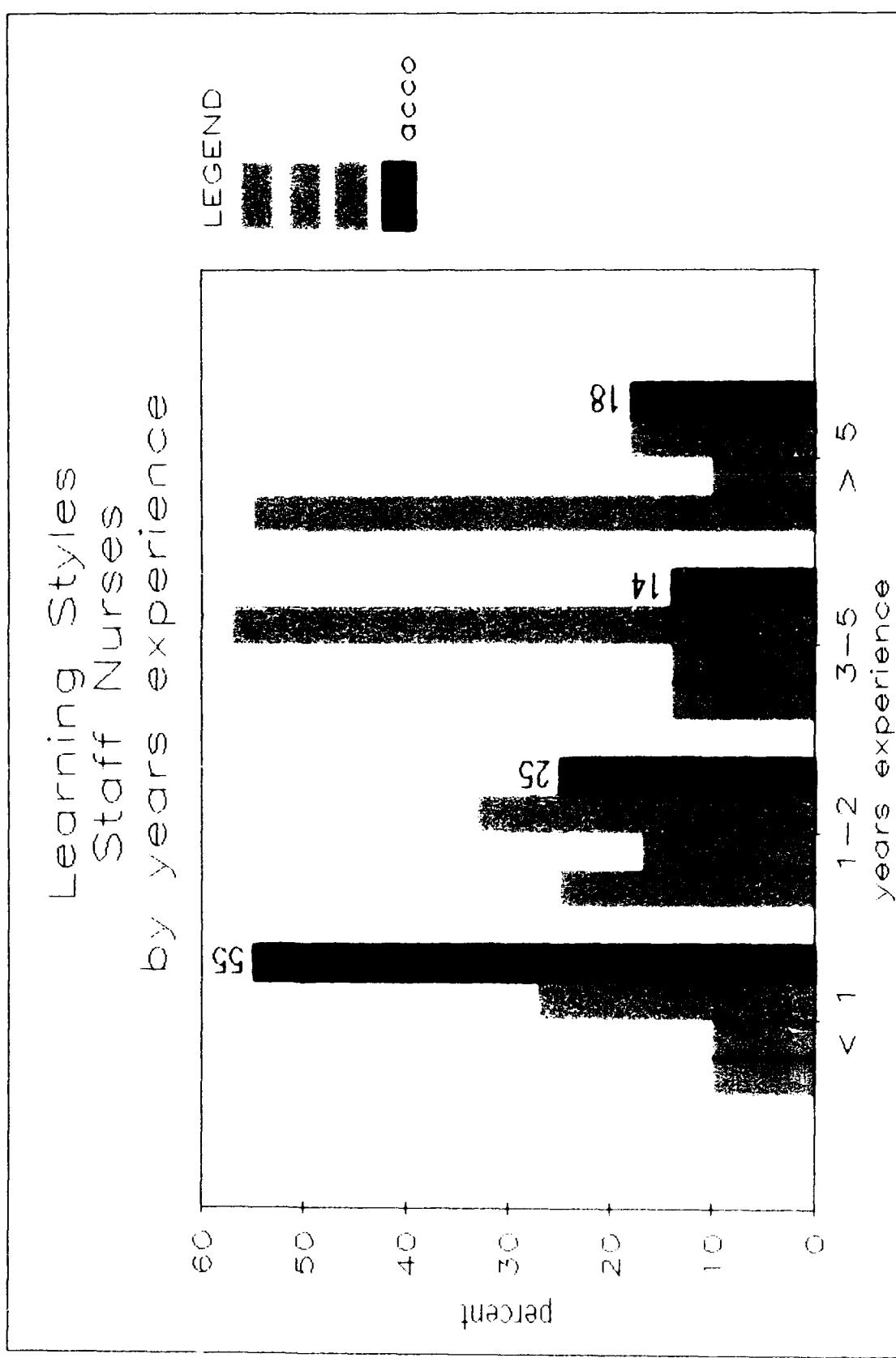
indicated the assimilator style. In the over 45 age group, while the sample size is small ($N=4$), there were no convergers or accommodators; three of the nurses (75%) were divergers, and one (25%) preferred the assimilator style.

Finally, Figure 9 contains the data comparing learning style to years of experience in the particular clinical area. Over 50% of the novices had the accommodator learning style. The learning styles of nurses with one to two years experience are relatively evenly distributed among the four categories. In the group of nurses with three to five years clinical experience, over 50% indicated the diverger learning style. The most experienced nurses in the survey, those with greater than five years experience, constituted the largest percentage of the sample (42%) and possessed the assimilator learning style more often than the three other styles combined.

The discussion

As indicated in Figure 1, a dominant learning style was clearly evident in each of the six clinical practice areas. The major learning style identified in four of the six areas was that of either accommodator or diverger. This finding is in keeping with Kolb's theory that nurses demonstrate predominantly concrete learning styles. It also supports earlier works of Christiansen, Lee, and Bugg (1979) indicating that the predominant learning styles of nurses were divergers or accommodators. However, an interesting finding which emerged in this study related to the learning styles of the medical-surgical and neonatal intensive care nurses. In both of these clinical practice

Figure 9



areas, nurses identified their predominant learning style as assimilator: far more abstract than the concrete learning styles of diverger and accommodator. This result tends to support the works of Plovnick (1975) who asserted that learning style differences can occur within a particular career specialty.

Many questions emerge from the data collected for this study. First, nurses in the pediatric and intensive care units demonstrated similar learning style distributions, and with the exception of the absence of convergers in the sample, the operating room nurses were similar to the first two specialties. It is not completely clear what is similar about these three clinical practice areas, or the nurses working in these areas. If, in accordance with learning theory, the environment is one influence on learning style, then what is similar about the environment of a pediatric ward, intensive care unit, or an operating room? And has the environment influenced learning style or does learning style cause a nurse to prefer a given setting? Each of these settings is unique, as are the clients. There are qualitative differences between dealing with ill children and parenting issues; very sick adults; and clients of all ages undergoing surgery. The intensive care unit is considered to be a more "high-tech" environment than the general ward, necessitating a concrete learning style, yet the sample of intensive care nurses in this study was not particularly concrete with regard to learning style. It may be that the variables of age and experience in the clinical area interact to produce the findings of this research, though no statistical analysis was performed due to the small numbers within each practice area. All but two

nurses in pediatrics, were under the age of 45. The nurses in these three areas tended to be younger than others in the study; however, years of experience in these three areas was evenly divided: there were similar numbers of novice nurses as well as those with more experience. Thus a question arises concerning the possible relationship between age and learning style. Certainly this is an area for further research.

A second finding of interest was the similarity in learning styles of the medical-surgical and neonatal intensive care unit nurses. The predominant learning style in these two clinical areas was that of assimilator (70% and 60% of nurses respectively). In many ways these two clinical areas seem diametrically opposite; the focus of one being the care of chronically or acutely ill adults in a ward type-setting; and the other being the care of critically ill, premature infants in a unit-type setting. The knowledge and skills required of nurses working in these areas are quite different. Yet there are similarities in these two sample groups. The majority of nurses in both cases were between the ages of 26 and 35; however, more significant is that all but four of the sample had over five years experience in the clinical area. Six out of seven of the medical-surgical nurses preferring the assimilator style had over five years experience, and five out of these seven were between the ages of 26 and 35. Two thirds of the assimilators in the neonatal sample had over five years experience.

An additional finding of interest related to the assimilator style emerged from the operating room and intensive care unit subgroups. In both cases the nurses preferring the assimilator style had over five years experience, raising questions about the development of learning

style. Does learning style change as one becomes more experienced? Do learning styles change because of age? Do novice nurses learn differently than experienced nurses? Or can differences in learning style be attributed to changes in education over time?

When learning styles were distributed according to age, the data reflected certain trends. The majority of nurses in the study were between the ages of 26 and 35, and their learning styles were relatively evenly distributed. Yet, younger nurses tended to have accommodating learning styles. This finding reflects something about experience and knowledge. In a new learning situation, when a nurse has few prior experiences to call upon, perhaps a concrete, active learning style is more effective. As a nurse gains experience, with many previous similar situations to help in problem-solving and learning, perhaps the learning style changes to one more abstract or reflective. This idea may be supported by the age 36 to 45 group, and somewhat by the 26 to 35 age range. While the learning style of nurses in the over 45 group was concrete there were only five nurses in this age category, discrediting any conclusions for this group. Further study in this area is definitely indicated.

And last worth noting, are the results of the learning styles in the labor and delivery practice area. Clearly, the majority had the concrete learning style of accommodator. The age of the sample suggests the same questions raised regarding age and learning style. The majority of the labor and delivery nurses surveyed were in the two younger age groups. There were none over the age of 45, and only one between the age of 36 and 45. The rest were evenly distributed between

the two remaining age groups. Additionally, most had two or less years clinical experience. Only two had more than five years experience and one had three to five years clinical experience.

In conclusion, the data on the learning styles of this sample of 52 nurses indicate some interesting trends, especially when subdivided into age and years of experience within practice areas. A sample size of 52, while adequate for this study, is not large enough to be comprehensive, especially when subgroups are examined. While the methodology was adequate for the purposes of this study; in future research wider cross-sections of ages and experience are indicated. The Kolb's Learning Style Inventory was an appropriate instrument for this research; it was easily administered, the results were computed without difficulty, and it was sensitive enough to detect learning style differences. Thus, the goal of this study was achieved: the learning styles of nurses in several different clinical practice areas were identified.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter contains the summary, conclusions, and recommendations derived from this study. The summary of the study is presented first, followed by the research conclusions. The chapter concludes with a discussion of recommendations.

Summary

The object of this research was to determine the learning styles of staff nurses working in selected clinical areas of practice. A total of 52 registered nurses working in the clinical areas of pediatrics, neonatal intensive care, labor and delivery, operating room, general medical-surgical, and the intensive care unit, comprised the sample. The setting was a large teaching hospital in a metropolitan city of the Southeast United States. The instrument employed in this study, Kolb's Learning Style Inventory, classified each nurse into one of four possible learning styles: accommodator, diverger, converger, or assimilator.

Conclusions

A predominant learning style emerged among nurses working in each of the various clinical practice areas. These styles differed by clinical practice areas; however, because of the small sample size, the conclusions derived from this study are applicable only to the population surveyed and include the following:

1. The predominant learning style of diverger was demonstrated by the pediatric, operating room, and intensive care unit nurses indicating proficiency in concrete experience and reflective observation skills.

2. The predominant learning style of the labor and delivery nurses was that of accommodator, characterized by proficiency in concrete experience and active experimentation.

3. Medical-surgical and neonatal intensive care nurses indicated a predominant learning style of assimilator, this style reflecting the skills of abstract conceptualization and reflective observation.

4. Overall, the nurses in this study demonstrated a predominantly concrete learning style.

Additionally, learning style differences emerged among nurses according to age, and years of experience in the practice area. These differences are summarized below:

1. The predominant learning style of nurses age 25 or younger was accommodator.

2. A learning style of assimilator was indicated in both the 26-35 and 36-45 age group.

3. Nurses over age 45 demonstrated a learning style of diverger.

4. Nurses with less than one year of clinical experience demonstrated a learning style of accommodator.

5. Those nurses with three or more years of experience showed preferences for the diverger learning style.

Recommendations

Based on the data and conclusions, the investigator offers the following recommendations for further research:

1. Further investigations of this type should be conducted using larger samples from various settings. Additional clinical practice areas such as community health, mental health, and occupational health can be included. Furthermore, the learning styles of nurse administrators, practitioners, midwives, anesthetists, and educators can comprise other groups of nurses for study.
2. Investigation into learning style by age group is recommended, as well as studies which map learning styles over time, to determine if changes occur in learning style as one ages.
3. Studies of learning styles of nurses by years of clinical experience should be conducted. This recommendation closely parallels the previous recommendation; one could follow the learning styles of nurses as they gain clinical experience, to detect possible shifts in style. This study could be longitudinal, beginning at the undergraduate level, followed by an assessment of changes after licensure and at selected future milestones.
4. Investigation into learning style and environment is recommended. It may be that nurses experience changes in learning style as a result of transfers from one clinical practice area to another.

This study supports earlier studies which assert that differences in learning style do exist among individuals and groups. While many variables interact in any one learning transaction, the influence of

learning style is an important consideration. The results of this study demonstrated that, for the given sample, differences in learning style did exist between nurses practicing in several diverse areas. Furthermore, the research suggested that age and years of clinical experience may also serve as influencing factors. While the data obtained from this study do not provide a basis for generalizing to a general population, these results do suggest considerations for nurse educators involved in the teaching-learning process, specifically in the selection of instructional methodologies for nurses.

REFERENCES

- American Nurses' Association. (1976). Guidelines for staff development. Kansas City: ANA.
- Baker, J.D., & Marks, W.E. (1981). Learning style analysis in anesthesia education. Anesthesiology Review, VIII(7), 31-34.
- Blagg, J.D. (1985). Cognitive styles and learning styles as predictors of academic success in a graduate allied health education program. Journal of allied health, 14(1), 89-97.
- Christiansen, M., Lee, P. & Bugg, P. (1979). Professional development of nurse practitioners as a function of need motivation, learning style, and locus of control. Nursing Research, 28(1), 51-56.
- Cranston, C.N., & McCort, B. (1985). A learner analysis experiment: Cognitive style versus learning style in undergraduate nursing education. Journal of Nursing Education, 24(4), 136-138.
- Cross, P.K. (1979). Accent on learning. San Francisco: Jossey Bass.
- Garity, J. (1985). Learning styles basis for creative teaching and learning. Nurse Educator, March-April, 12-16.
- Joint Commission for Accreditaation of Hospitals. (1981). Accreditation manual for hospitals (1982 Ed.). Chicago: JCAH.
- Kolb, D.A. (1984). Experiential learning. New Jersey: Prentice Hall.
- Kolb, D.A. (1976). Learning style inventory, Technical manual. Boston: McBer & Co.
- Kolb, D. (1981). Learning styles and disciplinary differences. In A. W. Chickering (Ed.), The Modern American College. San Francisco: Jossey-Bass.
- Laschinger, H.K. (1986). Learning styles of nursing students and

- environmental press perceptions of two clinical nursing settings.
Journal of Advanced Nursing, 11, 289-294.
- Laschinger, H.K., & Boss, W. (1984). Learning style of nursing students and career choices. Journal of Advanced Nursing, 9, 2375-380.
- Leonard, A. & Harris, I. (1979). Learning style in a primary care internal medicine residency program. Archives of Internal Medicine, 139, 872-875.
- Llorens, L.A., & Adams, S.P. (1978). Learning style preferences of occupational therapy students. The American Journal of Occupational Therapy, 32, 161-164.
- Mays, B.B. (1983). An investigation of the cognitive styles of 76 associate degree medical laboratory technology students. American Journal of Medical Technology, 49(10), 719-722.
- Merritt, S.L. (1983). Learning style preferences of baccalaureate nursing students and career choices. Nursing Research, 32(6), 367-372.
- O'Connor, A.B. (1986). Nursing staff development and continuing education. Boston: Little, Brown, and Co.
- Payton, O.D., Hueter, J., & McDonald, M.E. (1979). Learning style preferences, physical therapy students in the United States. Physical Therapy, 59(2), 147-152.
- Plovnick, M.S. (1975) Primary care choices and medical students' learning styles. Journal of Medical Education, 50, 849-855.
- Ramsborg, G.C., & Holloway, R.L. (1985). Learning style analysis: A comparison of CRNA clinical instructors and student nurse anesthetists. Journal of the American Association of Nurse

- Anesthetists, 53(5), 439-444.
- Rezler, A.G., & Rezmovic, V. (1981). The learning preference inventory. Journal of Allied Health, 10, 28-34.
- Rogers, J.C., & Hill, D.J. (1980). Learning style preferences of bachelor's and master's students in occupational therapy. The American Journal of Occupational Therapy, 34(12), 789-793.
- Sadler, G.R., Plovnick, M., & Snope, F.C. (1978). Learning styles and teaching implication. Journal of Medical Education, 53, 847-849.
- Stafford, E.M. (1986). Relationship between occupational therapy student learning styles and clinic performance. The American Journal of Occupational Therapy, 40(1), 34-39.
- Suddick, R.P., Yancey, J.M., & Wilson, S. (1983). Mirror-tracing and embedded figures tests as predictors of dental students' performance. Journal of Dental Education, 47, 149-154.
- Thomas, R.M. (1986). Management team assessment: A learning style inventory. Nursing management, 17(3), 39-48.
- Vittetoe, M.C. (1983). A study of learning style preference of medical technology and physical therapy students. American Journal of Medical Technology, 49(9), 661-668.
- Vittetoe, M.C., & Hooker, E. (1983). Learning style preferences of allied health practitioners in a teacher education program. Journal of allied health, 12(1) 48-55.
- Whitney, M.A., & Caplan, R.M. (1978). Learning style and instructional preferences of family practice physicians. Journal of Medical Education, 53, 684-686.
- Witkin, H.A., & Goodenough, D.R. (1981). Cognitive styles: Essence and

origins. New York: International Universities Press, Inc.

Witkin, H.A., Moore, C.A., Goodenough, D.R., & Cox, P.W. (1977).

Educational implications of cognitive styles. Review of Educational Research, 47(1), 1-64.

Witkin, H.A., Moore, C.A., Goodenough, D.R., Friedman, F., Owen, D.R., & Raskin, E. (1977). Role of the field-dependent and field independent cognitive styles in academic evolution. Journal of Educational Psychology, 69, 197-211.

Wunderlich, R., & Gjerde, C.L. (1978). Another look at learning style inventory and medical career choice. Journal of Medical Education, 53, 45-54.

APPENDICES

Appendix A

Nell Hodgson Woodruff School of Nursing
Emory University

Anne T. Chaisson
3525 Club Dr. #1102
Lawrenceville, GA 30245

Dear R.N.,

I am a graduate student in the nursing education program at Emory University. I am conducting research on nurses' learning styles as part of my masters thesis. This letter is to ask for your participation in this study. Participation is completely voluntary. You are free to decline or withdraw at any time, with no effect on your status as an employee at this hospital.

Participation in this study involves completing the attached questionnaire and demographic data sheet. All responses will be kept anonymous; the data will be numerically coded for purposes of analysis. Final results will be presented in group form.

I greatly appreciate the time you spend participating in this study. While your participation may not benefit you directly, it will surely have significant contributions to nursing and nursing education.

Should you decide to participate, please complete the two attached forms. It should take about ten minutes. Deposit completed forms in the box at the nurses' station. Please be sure to answer ALL questions. YOUR RETURN OF THE COMPLETED QUESTIONNAIRE WILL CONSTITUTE INFORMED CONSENT TO PARTICIPATE IN THIS RESEARCH AS DESCRIBED IN THIS LETTER.

Should you have any questions about this study, please feel free to contact me. My home phone number is 923-0583. Thank-you very much for your participation.

Sincerely,

Anne T. Chaisson
Graduate Student, Nrg. Ed.
Emory University

Appendix B

Nell Hodgson Woodruff School of Nursing

Emory University

DEMOGRAPHIC FORM

1. Education: (check all that apply)

ADN _____ BSN _____ Diploma _____

2. Sex:

Male _____ Female _____

3. Current area of clinical practice:

Pediatrics _____

Labor/Delivery _____

Operating Room _____

Adult Critical Care _____

Adult med/surg _____

Neonatal ICU _____

4. Is this your choice of clinical practice?

Yes _____ No _____

5. Age:

25 or under _____

26-35 _____

36-45 _____

over 45 _____

6. Length of time in current area of practice:

Less than 1 year _____ 3-5 years _____

1-2 years _____ over 5 years _____